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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/485,325	05/22/2000	JUERGEN HAHN	10191/1295	1777

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EXAMINER

STOCK JR, GORDON J

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 06/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/485,325

Applicant(s)

HAHN ET AL.

Examiner

Gordon J Stock

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 9, 10 and 12-16 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on May 22, 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

1. The Preliminary Amendment that was received on May 22, 2000 has been entered into the file.

Claim Objections

2. **Claim 16** is objected to for the following: the phrase "arranged in rotationally driven fashion" is indefinite, for it is unclear as to how the device is configured to be in rotationally driven fashion. Clarification is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 9, 10, 12-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Finarov (5,764,365)**.

As to **claim 9**, Finarov discloses a measurement apparatus comprising:

a light source emitting a beam (Fig. 5c, **120, 130, 132**; col. 7, lines 9-67); a transmitting optical system conveying the beam to an incidence point on the substrate (Fig. 5b, **100, 150, 154**; col. 7, lines 24-58); a photodetector device (Fig. 5c, **186, 170, 172, 198**); a receiving optical system conveying the reflected beam to the photodetector device (Fig. 5c, **156, 152, 102**; col. 7, lines 35-37; col. 8, lines 46-64); the receiving optical system including an analyzer (Fig. 5c, **160**); an evaluation device, a data processor (col. 11, lines 19-20); an angle measurement device sensing an angle of the reflected beam relative to a

tangential plane of the substrate at the incidence point (Fig. 5c, **152**, **194**, **196**, and **198**; col. 10, lines 65-67; col. 11, lines 1-6); the polarization direction of the beam and of the analyzer being modified in time relative to one another (Fig. 5b, **124** and **140**; Fig. 5c, **160** and **162**)

Finarov is silent concerning the determination of the film thickness as a function of the sensed angle and the intensity changes. However, it is obvious to one skilled in the art that the data processor does determine the film thickness as a function of intensity and as a function of the sensed angle, for it is well known in the art that the film thickness is a function of intensity change and angle of incidence.

As to **claim 10**, Finarov discloses everything as above (see **claim 9**), in addition, Finarov discloses the angle measurement device including a photodetector unit that is position-sensitive in at least one of an X and Y direction (col. 11, lines 1-6) with an angle of reflection being calculated from position data and distance data with an evaluation stage (col. 11, lines 7-21).

As to **claims 12 and 13**, Finarov discloses everything as above (see claim 10). However, he does not disclose the photodetector unit including two position-sensitive photodetectors, the angle of reflecting being calculated based on differing positions of the reflected beam on the two position sensitive photodetectors, and a beam splitter arranged in front of the two position-sensitive photodetectors, each reaching a partial beam of the reflected beam. Finarov discloses in the two dimensional embodiment of the beam deflector, a S2044 detector, that is arranged at a distance from the incidence point in a beam path of the reflected beam; whereas, a beamsplitter is in front of the two-dimensional PSD (Fig. 5c, **194**). This detector is a two-dimensional PSD. Two photodetectors, one x-direction (one dimensional) sensitive and another y-direction (one

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dimensional) sensitive are functionally equivalent to one two-dimensional photodetector; whereas, the angle of reflection would be calculated from the differing positions of the reflected beam on the two position-sensitive photodetectors (the x-position on one; the y-position on the other) rather than the one position on the two-dimensional photodetector (the one position being x and y sensitive). Therefore, it would be obvious to one skilled in the art to substitute the S2044 detector with two one-dimensional photodetectors, for the two are functionally equivalent to the one two-dimensional detector. And whereas the two photodetectors are substituted for the one two-dimensional photodetector, it would be obvious to one having ordinary skill in the art to arrange the beamsplitter in order for the two photodetectors to receive the partial beam of the reflected beam in order for the angle of incidence to be calculated accurately in a two-dimensional beam deflecting system, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

As to **claim 14**, Finarov discloses everything as above (see **claim 9**). In addition, Finarov discloses a converging lens arranged in front of the photodetector device (Fig. 5c, 168).

As to **claim 15**, Finarov discloses everything as above (see claim 9). However, Finarov does not disclose the transmitting optical system and the receiving optical system being integrated into a common carrier. It would have been obvious to one having ordinary skill in the art at the time the invention was made to integrate the transmitting optical system and the receiving optical system into a common carrier for convenient portability, since it has been held that making an old device portable or movable without producing any new and unexpected result involves only routine skill in the art. *In re Lindberg*, 93 USPQ 23 (CCPA 1952).

In another embodiment, Finarov discloses a stationary support for holding a sample in the ellipsometer of Figure 2 (col. 5, lines 10-15). It would have been obvious to one skilled in the art at the time the invention was made to have a stationary three-point support for holding a sample in a common carrier of a portable system because the three-point support is a preferred support for three points define a plane making the sample flat and the support keeps the sample stationary throughout the measurement process.

As to **claim 16**, Finarov discloses everything as above (see **claim 9**). In addition, Finarov discloses the transmitting optical system including a polarizer (Fig. 5b, **124**) and a quarter wave plate (Fig. 5b, **122**) in a beam path of the beam. Finarov discloses the polarizer and the analyzer being arranged in rotationally driven fashion about an axis normal to a surface of the one of the polarizer and the analyzer; whereas, Finarov discloses "the polarizer having associated therewith motor drives (Fig. 5b, **140**). Although, not shown, motor drives typically operate with precise angular encoders. (col. 8, lines 25-28)." In addition, Finarov discloses the analyzer being similar to the polarizer (col. 8, lines 55-57) with a motor (Fig. 5c, **162**).

Allowable Subject Matter

5. **Claim 11** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

If rewritten, the following is a statement of reasons for the indication of allowable subject matter: the prior art references fail to provide or fairly suggest, in an ellipsometric apparatus, the intensity changes and position data being sensed by a same detector in **claim 11**.

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Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is:

(703) 308-7722

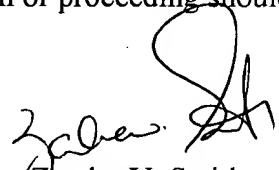
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787.

The examiner can normally be reached on Monday-Friday, 8:00 a.m. – 5:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


gs

June 17, 2002


Zandra V. Smith
Patent Examiner
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